

MOLDING DEVICE FOR LAMINATED MOLDING AND MOLDING PROCESS

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**Abstract**

PROBLEM TO BE SOLVED: To make it possible to easily form a laminated molding at a low equipment cost and improve productivity by forming a cavity for molding a skin material using a resin core material made by a cavity for molding the resin core material, and molding the skin material by lamination.

SOLUTION: A top force 4 for molding of a mold descends to be stacked on a bottom force, so that these forces are brought into contact with each other in a mold clamped state, and consequently, a cavity for a resin core material 2 is formed by the fitting together of the molding parts. Further, a molten resin packed into the cavity from an injection cylinder 17 is set by cooling to form the resin core material 2. Next, the top force 4 for molding ascends to an elevation almost equivalent to the thickness of the skin material 3 to form a cavity K-1 for molding a skin and pack a molten resin S-1 for the skin material into the cavity K-1 from an injection cylinder 16. Thus the skin material 3 is integrally formed with the resin core material 2 by the cooling and setting of the molten resin S-1 for the skin material.

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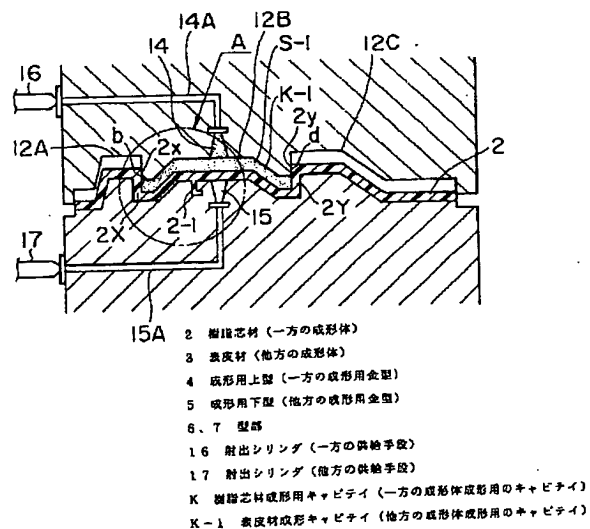
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(54) 【発明の名称】 積層成形品の成形装置及び成形方法

(57) 【要約】

【課題】 設備費が安価になるばかりか、量産性を向上させることができる積層成形品の成形装置を提供する。

【解決手段】 成形用上型4と成形用下型5とを型閉して、成形用上型4と成形用下型5との型部6、7で樹脂芯材成形用キャビティKを形成し、この樹脂芯材成形用キャビティKに射出シリンダ16により溶融樹脂Sを供給して樹脂芯材2を成形し、成形用上型4を開型方向に所定量移動してその構成部位の一部に樹脂芯材2を用いた表皮材成形キャビティK-1を形成し、この表皮材成形キャビティK-1に射出シリンダ17により表皮材用溶融樹脂S-1を供給して樹脂芯材2に表皮材3を積層成形する。



【特許請求の範囲】

【請求項1】 一方及び他方の成形用金型の型閉時に互いの型部が合わされて形成される一方の成形体成形用のキャビティと、

一方及び他方の成形用金型のいずれか一方の、抜き角度がシール性能を満たす最小限の角度を有する縦面部が一方の成形体の垂直部の垂直壁面に摺動して形成される密閉空間であって、その構成部位の一部に一方の成形体を用いた他方の成形体成形用のキャビティと、一方の成形体成形用のキャビティに一方の成形材料を供給する一方の供給手段と、

他方の成形体成形用のキャビティに他方の成形材料を供給する他方の供給手段とを備えたことを特徴とする積層成形品の成形装置。

【請求項2】 一方の成形用金型と他方の成形用金型とを型閉して、両成形用金型の型部で一方の成形体成形用のキャビティを形成した後に、この一方の成形体成形用のキャビティに一方の成形材料供給手段により一方の成形材料を供給して一方の成形体を成形し、その後、一方及び他方の成形用金型のいずれか一方を開型方向に所定量移動して、一方及び他方の成形用金型のいずれか一方の、抜き角度がシール性能を満たす最小限の角度を有する縦面部が一方の成形体の垂直部の垂直壁面に摺動して形成される密閉空間であって、その構成部位の一部に一方の成形体を用いた他方の成形体成形用のキャビティを形成し、この他方の成形体成形用のキャビティに他方の成形材料供給手段により他方の成形材料を供給して一方の成形体に他方の成形体を積層成形するようにしたことを特徴とする積層成形品の成形方法。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、表皮材と熱可塑性樹脂よりなる二積層成形品、すなわち、成形品の一部は表皮材で覆われているも、他の部位は樹脂芯材がそのまま表出している成形品の成形装置及び成形方法に係わり、特に所定部分のみを表皮材で被覆した表皮材と熱可塑性樹脂との積層成形品の成形装置及び成形方法に関する。

【0002】

【従来の技術】上記のような所定部分のみを表皮材で被覆した表皮材と熱可塑性樹脂との二色積層成形品は、自動車のドアトリム、リヤサイドトリム等の内装部品に用いられている。

【0003】このような二色積層成形品の製造は、熱可塑性樹脂を射出成形等で予め樹脂芯材に成形しておき、この樹脂芯材に接着剤等を用いて所定形状の表皮材を貼着するか、予め表皮材をハードボード等に貼着させた部品を製作しておいて、この部品をビス等を用いて樹脂芯材に取り付ける方法等があるが、このような方法では、後工程を要し、手間がかかると共に、コストアップの要

因となっていた。

【0004】そこで、このような二色積層成形品の製造において、改良すべく、例えば、特開昭64-26414号公報に記載されたものが提案されている。

【0005】これによると、図5に示すように未閉鎖のモールド成形用の上、下金型60、61間に表皮材62及び熔融樹脂63を供給し、上、下金型60、61を閉じ、表皮材62と熱可塑性樹脂（熔融樹脂63）からなる二色積層成形品を製造するに際し、所定形状に裁断した表皮材62を上金型60上の所定位置にセットし、表皮材62の裏面側のほぼ中央部に熔融樹脂63を供給することにより、所定部分のみを表皮材62で被覆した、表皮材62と熱可塑性樹脂からなる二色積層成形品を得るというものである。

【0006】すなわち、所定寸法に裁断した表皮材62を表面側を上にして上金型60の成形面の所定部分にセットする。次いで、型締め装置の昇降機構（図示せず）を作動させ、上金型60を下降させて上金型60と下金型61とが形成するキャビティ面のクリアランスが製品厚さより大きい位置で一旦停止させる（図示状態）。この停止位置で熔融樹脂63を射出成形機等の熔融樹脂供給装置（図示せず）により、下金型61内に設けられた樹脂通路（図示せず）を通じて表皮材62の裏面側及びキャビティに供給する。

【0007】次いで、再度、昇降機構を作動させて上金型60を下降させることにより、表皮材62を押圧させると、熔融樹脂63が金型キャビティ間に流動拡大して、表皮材62と熱可塑性樹脂とが一体になって賦形が完了する。この結果、一部分が表皮材62によって被覆した、表皮材62と熱可塑性樹脂からなる二色積層成形品を完成している。

【0008】また、多材質成形品の成形には、特開平6-246783号公報に記載されたものが提案されている。これは、図6に示すように固定盤70に回転可能に設けられて回転モータ71により反転させられる金型回転盤72に第1、第2下金型73、74を180度位相をずらして取り付け、固定盤70と対向する位置に配置されて複数のダイバー75Aにより上下動可能に支持された可動盤75に、第1下金型73及び第2下金型74に対向させて一次側上金型76及び二次側上金型77を設け、一次側上金型76に一次側射出シリンダ78を、二次側上金型77に二次側射出シリンダ79をそれぞれ接続した構造になっている。

【0009】そして、第1下金型73が一次側上金型76と対面し、また、第2下金型74が二次側上金型77と対面し、型閉・型締された状態で一次側射出シリンダ78から熔融状態の亜鉛が、一次側上金型76及び第1下金型73のキャビティ内に射出されて、成形品のうち金属部が成形される。この時、二次側射出シリンダ79からは熔融樹脂は射出されない。

【0010】次に、型開されると共に、回転モータ71が駆動されて金型回転盤72が180度回転されることにより第1下金型73が二次側上金型77と対面し、第2下金型74が一次側上金型76と対面し、再び、型閉・型締される。そして、二次側射出シリンダ79から溶融樹脂が一次側上金型76及び第2下金型74のキャビティ内に射出されて、金属部に樹脂部を積層した多材質成形品が成形される。

【0011】

【発明が解決しようとする課題】しかしながら、上記従来の二色積層成形品の製造方法にあつては、二色積層成形品の成形の都度に、所定寸法に裁断した表皮材62を表面側を上にして上金型60の成形面の所定部分にセットして、表皮材62の見切りライン部が下金型61の木目込み溝部のセンターライン上に位置するように位置決めするために、手間取り、二色積層成形品を量産するには適合しないという問題点があった。

【0012】また、上記した多材質成形品の成形にあつては、第1下金型73及び第2下金型74に対向させて一次側上金型76及び二次側上金型77を配置するように金型が複数必要になって、設備費がかさむ等の問題点があった。

【0013】本発明は、上記の問題点に着目して成されたものであって、その第1の目的とするところは、設備費が安価になるばかりか、積層成形品を容易に成形することが可能になって、量産性を向上させることができる積層成形品の成形装置を提供することにある。

【0014】また、本発明の第2の目的とするところは、一方の成形用金型と他方の成形用金型との一対の金型構成で積層成形品を容易に成形することが可能になって、量産性を向上させることができる積層成形品の成形方法を提供することにある。

【0015】

【課題を解決するための手段】上記の第1の目的を達成するために、請求項1の発明に係わる積層成形品の成形装置は、一方及び他方の成形用金型の型閉時に互いの型部が合わされて形成される一方の成形体成形用のキャビティと、一方及び他方の成形用金型のいずれか一方の、抜き角度がシール性能を満たす最小限の角度を有する縦面部が一方の成形体の垂直部の垂直壁面に摺動して形成される密閉空間であつて、その構成部位の一部に一方の成形体を用いた他方の成形体成形用のキャビティと、一方の成形体成形用のキャビティに一方の成形材料を供給する一方の供給手段と、他方の成形体成形用のキャビティに他方の成形材料を供給する他方の供給手段とを備えたことを特徴とする。

【0016】かかる構成により、一方の成形用金型と他方の成形用金型とを型閉して、両成形用金型の型部で一方の成形体成形用のキャビティを形成した後に、この一方の成形体成形用のキャビティに一方の成形材料供給手

段により一方の成形材料を供給して一方の成形体を成形し、その後に、成形用金型のいずれか一方を、他方の成形体の厚さに略相当する距離移動させることにより、一方及び他方の成形用金型のいずれか一方の抜き角度がシール性能を満たす最小限の角度を有する縦面部を一方の成形体の垂直部の垂直壁面に摺動させて密閉空間としての他方の成形体成形用のキャビティを形成し、この他方の成形体成形用のキャビティに他方の成形材料供給手段により他方の成形材料を供給して一方の成形体に他方の成形体を積層成形する。

【0017】このように、一方の成形体に他方の成形体を積層成形するのに、一方の成形用金型と他方の成形用金型との一対の金型構成でよいために、設備費が安価になるばかりか、積層成形品を容易に成形することが可能になって、量産性を向上させることができる。

【0018】また、上記の第2の目的を達成するために、請求項2の発明に係わる積層成形品の成形方法は、一方の成形用金型と他方の成形用金型とを型閉して、両成形用金型の型部で一方の成形体成形用のキャビティを形成した後に、この一方の成形体成形用のキャビティに一方の成形材料供給手段により一方の成形材料を供給して一方の成形体を成形し、その後に、一方及び他方の成形用金型のいずれか一方を開型方向に所定量移動して、一方及び他方の成形用金型のいずれか一方の抜き角度がシール性能を満たす最小限の角度を有する縦面部が一方の成形体の垂直部の垂直壁面に摺動して形成される密閉空間であつて、その構成部位の一部に一方の成形体を用いた他方の成形体成形用のキャビティを形成し、この他方の成形体成形用のキャビティに他方の成形材料供給手段により他方の成形材料を供給して一方の成形体に他方の成形体を積層成形するようにしたことを特徴とする。

【0019】したがって、一方の成形用金型と他方の成形用金型との一対の金型構成で積層成形品を容易に成形することが可能になって、量産性を向上させることができる。

【0020】

【発明の実施の形態】以下、本発明の実施の形態を図面に基づいて説明する。図1は本発明に係わる積層成形品の成形装置及び成形方法により成形された二色積層成形品としての自動車用内装部材であるドアトリムの斜視図、図2は本発明に係わる積層成形品の成形装置の成形用金型構造の一部省略した断面図、図3は同積層成形品の成形装置において表皮材成形用キャビティ形成状態の成形用金型構造の一部省略した断面図、図4は図3のA部の拡大図である。

【0021】以下、本発明に係わる積層成形品の成形装置及び成形方法により製造される二色積層成形品は、例えば、図1及び図2に示すような自動車用内装部材としてのドアトリムである。このドアトリム1は、所望の曲面形状に形成された熱可塑性樹脂である樹脂芯材2と、

この樹脂芯材2の表面に一部に貼着一体化された表皮材3とから大略構成してある。

【0022】この樹脂芯材2は、タルク等の充填材を混入したポリプロピレン樹脂もしくはポリプロピレン樹脂単体を素材として成形されたものであり、表皮材3は、ポリプロピレンエラストマー等からなる発泡層で形成してあり、その成形時に、樹脂芯材2の表面側の一部に一体成形されることになる。

【0023】本発明に係わる積層成形品の成形装置は、図2に示すように一方の成形用金型である成形用上型4と、他方の成形用金型である成形用下型5とを備えており、この成形用上型4は成形用下型5に対して昇降動するものである。そして、成形用上型4には型部6が、成形用下型5には型部7がそれぞれ対向させて形成してあり、両型部6、7で一方の成形体成形用のキャビテイである樹脂芯材成形用キャビテイKを形成している。

【0024】成形用上型4の型部6は、この成形用上型4の成形用下型5との合せ面4Aに形成してあって、ドアトリム1の樹脂芯材2の一方(表側)の面部の形状の大略等しい形状を成していて、その左から右に第1凹部12A、第2凹部12B、第3凹部12Cを有し、第1凹部12Aと第2凹部12Bとは第1上型側凸部12Dにより連なり、第2凹部12Bと第3凹部12Cとは第2上型側凸部12Eにより連なっている。

【0025】そして、第1凹部12Aの一方の壁面部は、抜き角度が零(0)の垂直面部aに成されており、第1凹部12Aの他方の壁面部は、第1上型側凸部12Dの一方の壁面部を形成しており、この壁面部は、抜き角度がシール性能を満たす最小限の角度、すなわち、抜き角度が零(0)～5度の縦面部bに成されている。

【0026】また、第3凹部12Cの一方の壁面部は抜き角度が零(0)の垂直面部cに成されており、第3凹部12Cの他方の壁面部は、第2上型側凸部12Eの一方の壁面部を形成しており、この壁面部は、抜き角度がシール性能を満たす最小限の角度、すなわち、抜き角度が零(0)～5度の縦面部dに成されている。

【0027】また、第2凹部12Bは平坦部eを有しており、この平坦部eの一端部は第1上型側凸部12Dの傾斜面部fに連なり、平坦部eの他端部は第2上型側凸部12Eの傾斜面部gに連なっている。

【0028】成形用下型5の型部7は、この成形用下型5の成形用上型4との合せ面5Aに形成してあって、ドアトリム1の樹脂芯材2の他方(裏側)の面部の形状の大略等しい形状を成していて、その左から右に前記第1凹部12Aに対応する第1凸部13A、前記第2凹部12Bに対応する第2凸部13B、第3凹部12Cに対応する第3凸部13Cを有し、第1凸部13Aと第2凸部13Bとは、前記第1上型側凸部12Dに対応する第1下型側凹部13Dより連なり、第2凸部13Bと第3凸部13Cとは前記第2上型側凸部12Eに対応する第2下

型側凹部13Eにより連なっている。

【0029】そして、第1凸部13Aの一方の壁面部は、抜き角度が零(0)の垂直面部a'に成されており、第1凸部13Aの他方の壁面部は、第1下型側凹部13Dの一方の壁面部を形成しており、この壁面部は、抜き角度が零(0)の縦面部b'に成されている。

【0030】また、第3凸部13Cの一方の壁面部は、抜き角度が零(0)の垂直面部c'に成されており、第3凸部13Cの他方の壁面部は、第2下型側凹部13Eの一方の壁面部を形成しており、この壁面部は、抜き角度が零(0)の縦面部d'に成されている。

【0031】また、第2凸部13Bは平坦部e'を有しており、この平坦部e'の一端部は第1下型側凹部13Dの傾斜面部f'に連なり、平坦部e'の他端部は第2下型側凹部13Eの傾斜面部g'に連なっている。

【0032】そして、前記成形用上型4には、一方の成形材料供給手段である射出シリンダ16の吐出側に通路14Aを介して接続された樹脂材料供給用ゲート14が設けてあり、この樹脂材料供給用ゲート14は、前記型部6の第2凹部12Bの平坦部eの中央に開口している。また、成形用下型5には、他方の成形材料供給手段である射出シリンダ17の吐出側に通路15Aを介して接続された樹脂材料供給用ゲート15がそれぞれ設けてあり、樹脂材料供給用ゲート15は、型部7の第2凸部13Bの平坦部e'の中央に開口している。また、この平坦部e'には鍵状凹部であるアンカー成形部18が形成してある。

【0033】次に、上記のように構成された積層成形品の成形装置を用いて、二色積層成形品である自動車用内装部材としてのドアトリム1の製造を説明する。

【0034】成形装置にあっては、前記成形用上型4が下降して成形用下型5に重なり、両型の合せ面4A、5Aが互いに当接した型閉状態では、図2に示すように型部6、7が合わされてドアトリム1の樹脂芯材2の形状と同形状のキャビテイKを形成する。すなわち、前記第1凹部12Aには第1凸部13Aが、前記第2凹部12Bには第2凸部13Bが、第3凹部12Cには第3凸部13Cが、第1上型側凸部12Dには第1下型側凹部13Dが、第2上型側凸部12Eには第2下型側凹部13Eがそれぞれ樹脂芯材2の厚さに略等しい寸法の間隙を存して対向し、垂直面部a、a'が互いに当接し、また、縦面部b、b'、d、d'が互に対向している。

【0035】この状態で、前記射出シリンダ17が作動して、これの吐出側より一方の成形材料である熔融樹脂(タルク等の充填材を混入したポリプロピレン樹脂もしくはポリプロピレン樹脂単体)Sが吐出されて樹脂材料供給用ゲート15を介して前記樹脂芯材成形用キャビテイK内に充填される。この場合、前記成形用上型4及び成形用下型5に設けられて吸引手段(図示せず)により樹脂芯材成形用キャビテイK内のガス(空気)は排出さ

れる。したがって、溶融樹脂Sは樹脂芯材成形用キャビティK内に行き渡り、アンカー成形部18にも充填される。

【0036】そして、溶融樹脂Sの冷却・固化により一方の成形体である樹脂芯材2が成形される。この場合、前記成形用上型4の抜き角度が零(0)〜5度の縦面部bと成形用下型5の抜き角度が零(0)の縦面部b'との間及び前記成形用上型4の抜き角度が零(0)〜5度の縦面部dと成形用下型5の抜き角度が零(0)の縦面部d'の間にはそれぞれ垂直部2X、2Yが形成される。

【0037】次に、前記成形用上型4を、表皮材の厚さtに略相当する高さh(樹脂芯材2の垂直部2X、2Yの高さ寸法H内)に上昇させて、第1上型側凸部12Dと第2上型側凸部12Eとにより挟まれた第2凹部12Bと、この第2凹部12Bに対向する樹脂芯材2との間に密閉された他方の成形体成形用のキャビティである表皮材成形キャビティK-1を形成する。

【0038】すなわち、樹脂芯材2の成形時に、アンカー成形部18に溶融樹脂Sが充填されて、この溶融樹脂Sが冷却・固化することによりアンカー2-1が形成されるために、このアンカー2-1により樹脂芯材2は成形用下型5に固定される。したがって、前記成形用上型4を上昇させた場合、樹脂芯材2は成形用上型4に付いていかず、成形用上型4のみ上昇する。

【0039】そして、前記成形用上型4を、表皮材3の厚さtに略相当する高さhに上昇させた場合、成形用上型4の縦面部b及び成形用下型5の縦面部dが樹脂芯材2の垂直部2X、2Yの垂直壁面2x、2yを滑る。しかし、前記成形用上型4の上昇量(表皮材の厚さtに略相当する高さh)が、樹脂芯材2の垂直部2X、2Yの高さ寸法H内であるために、上昇限では、図3に示すように前記縦面部b、dが前記垂直部2X、2Yの垂直壁面2x、2yに当接状態であって、表皮材成形キャビティK-1は密閉されたものになる。

【0040】この状態で、前記射出シリンダ16が作動して、これの吐出側より他方の成形材料である表皮材用溶融樹脂(ポリプロピレンエラストマー)S-1が吐出されて樹脂材料供給用ゲート14を介して前記表皮材成形キャビティK-1内に充填される。この場合、前記成形用上型4に設けられて吸引手段(図示せず)により表皮材成形キャビティK-1内のガス(空気)は排出される。したがって、表皮材用溶融樹脂S-1は表皮材成形キャビティK-1内に行き渡り、表皮材用溶融樹脂S-1の冷却・固化により表皮材3が成形され、ここの表皮材3が樹脂芯材2と一体になる。

【0041】次に、型上昇開始工程に移り、前記成形用上型4を上昇させて、型上昇終了工程で開型し、二色積層成形品であるドアトリム10を搬出する。

【0042】上記した実施の形態によれば、成形用上型

4と成形用下型5とを型閉して、成形用上型4と成形用下型5との型部6、7で樹脂芯材成形用キャビティKを形成した後に、この樹脂芯材成形用キャビティKに射出シリンダ16により溶融樹脂Sを供給して樹脂芯材2を成形し、その後に、成形用上型4を開型方向に所定量移動して、成形用上型4の、抜き角度がシール性能を満たす最小限の角度、すなわち、抜き角度が零(0)〜5度の縦面部が樹脂芯材2の垂直部2X、2Yの垂直壁面2x、2yに摺動して形成される密閉空間であって、その構成部位の一部に樹脂芯材2を用いた表皮材成形キャビティK-1を形成し、この表皮材成形キャビティK-1に射出シリンダ17により表皮材用溶融樹脂S-1を供給して樹脂芯材2に表皮材3を積層成形する。

【0043】このように、樹脂芯材2に表皮材3を積層成形するのに、成形用上型4と成形用下型5との一対の金型構成でよいために、設備費が安価になるばかりか、積層成形品を容易に成形することが可能になって、量産性を向上させることができる。

【0044】

【発明の効果】以上説明したように、請求項1の発明に係わる積層成形品の成形装置によれば、一方及び他方の成形用金型の型閉時に互いの型部が合わされて形成される一方の成形体成形用のキャビティと、一方及び他方の成形用金型のいずれか一方の、抜き角度がシール性能を満たす最小限の角度を有する縦面部が一方の成形体の垂直部の垂直壁面に摺動して形成される密閉空間であって、その構成部位の一部に一方の成形体を用いた他方の成形体成形用のキャビティと、一方の成形体成形用のキャビティに一方の成形材料を供給する一方の供給手段と、他方の成形体成形用のキャビティに他方の成形材料を供給する他方の供給手段とを備えたことにより、一方の成形用金型と他方の成形用金型とを型閉して、両成形用金型の型部で一方の成形体成形用のキャビティを形成した後に、この一方の成形体成形用のキャビティに一方の成形材料供給手段により一方の成形材料を供給して一方の成形体を成形し、その後に、成形用金型のいずれか一方を、他方の成形体の厚さに略相当する距離移動させることにより、一方及び他方の成形用金型のいずれか一方の抜き角度がシール性能を満たす最小限の角度を有する縦面部を一方の成形体の垂直部の垂直壁面に摺動させて密閉空間としての他方の成形体成形用のキャビティを形成し、この他方の成形体成形用のキャビティに他方の成形材料供給手段により他方の成形材料を供給して一方の成形体に他方の成形体を積層成形する。

【0045】このように、一方の成形体に他方の成形体を積層成形するのに、一方の成形用金型と他方の成形用金型との一対の金型構成でよいために、設備費が安価になるばかりか、積層成形品を容易に成形することが可能になって、量産性を向上させることができる。

【0046】また、請求項2の発明に係わる積層成形品

の成形方法によれば、一方の成形用金型と他方の成形用金型とを型閉して、両成形用金型の型部で一方の成形体成形用のキャビティを形成した後に、この一方の成形体成形用のキャビティに一方の成形材料供給手段により一方の成形材料を供給して一方の成形体を成形し、その後、一方及び他方の成形用金型のいずれか一方を開型方向に所定量移動して、一方及び他方の成形用金型のいずれか一方の抜き角度がシール性能を満たす最小限の角度を有する縦面部が一方の成形体の垂直部の垂直壁面に摺動して形成される密閉空間であって、その構成部位の一部に一方の成形体を用いた他方の成形体成形用のキャビティを形成し、この他方の成形体成形用のキャビティに他方の成形材料供給手段により他方の成形材料を供給して一方の成形体に他方の成形体を積層成形するようにしたことにより、一方の成形用金型と他方の成形用金型との一对の金型構成で積層成形品を容易に成形することが可能になって、量産性を向上させることができる。

【図面の簡単な説明】

【図1】本発明に係わる積層成形品の成形装置及び成形方法により成形された二色積層成形品としての自動車用内装部材であるドアトリムの斜視図である。

【図2】本発明に係わる積層成形品の成形装置の成形用

金型構造の一部省略した断面図である。

【図3】同積層成形品の成形装置において表皮材成形用キャビティ形成状態の成形用金型構造の一部省略した断面図である。

【図4】図3のA部の拡大図である。

【図5】従来の積層成形品の成形装置の成形用金型構造の断面図である。

【図6】従来の他の積層成形品の成形装置の成形用金型構造の断面図である。

【符号の説明】

2 樹脂芯材（一方の成形体）

3 表皮材（他方の成形体）

4 成形用上型（一方の成形用金型）

5 成形用下型（他方の成形用金型）

6、7 型部

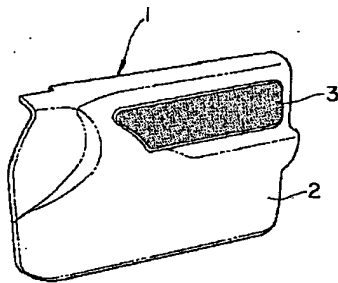
16 射出シリンダ（一方の供給手段）

17 射出シリンダ（他方の供給手段）

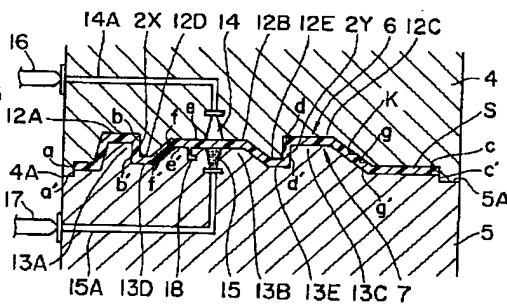
K 樹脂芯材成形用キャビティ（一方の成形体成形用のキャビティ）

K-1 表皮材成形キャビティ（他方の成形体成形用のキャビティ）

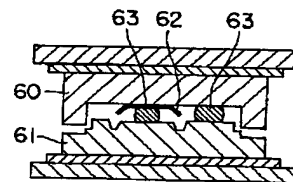
【図1】



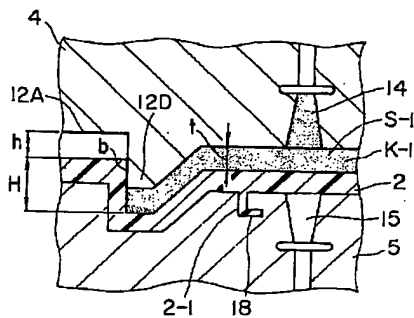
【図2】



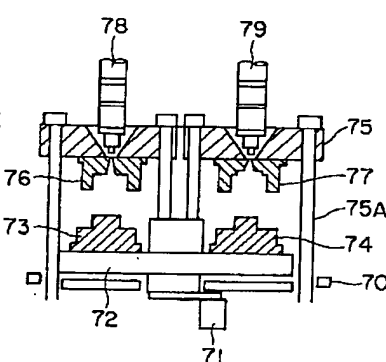
【図5】



【図4】



【図6】



* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

[Claim 1] At the time of **** of metal mold, mutual **** is put together and while is formed. on the other hand -- reaching -- the object for molding of another side -- with the mold cavity for Plastic-solid molding It is the closed space where ***** which has any of metal mold or one minimum angle with which it extracts and an angle fills a seal performance slides on the perpendicular wall surface of the vertical section of one Plastic solid, and is formed in it. on the other hand -- reaching -- the object for molding of another side -- The mold cavity for Plastic-solid molding of another side which used one Plastic solid for a part of the configuration site, Molding equipment of the molded laminate characterized by for while having supplied one molding material to the mold cavity for one Plastic-solid molding, and having a supply means and the supply means of another side which supplies the molding material of another side to the mold cavity for Plastic-solid molding of another side.

[Claim 2] one object for molding -- the object for molding of metal mold and another side -- metal mold -- ****ing -- the object for both molding, after forming the mold cavity for one Plastic-solid molding by **** of metal mold The specified quantity move of any of metal mold or one side is carried out in the orientation of an open type. the mold cavity for one's of these Plastic-solid molding -- one molding-material supply means -- one molding material -- supplying -- one Plastic solid -- fabricating -- after that -- on the other hand -- reaching -- the object for molding of another side -- It is the closed space where ***** which has any of metal mold or one minimum angle with which it extracts and an angle fills a seal performance slides on the perpendicular wall surface of the vertical section of one Plastic solid, and is formed in it. on the other hand -- reaching -- the object for molding of another side -- The mold cavity for Plastic-solid molding of another side which used one Plastic solid for a part of the configuration site is formed. The molding technique of the molded laminate characterized by supplying the molding material of another side to the mold cavity for Plastic-solid molding of this another side by the molding-material supply means of another side, and carrying out laminate molding of the Plastic solid of another side to one Plastic solid.

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] a part is covered by two molded laminates with which this invention consists of epidermis material and thermoplastics, i.e., mold goods, by epidermis material -- **** -- other sites are related with the molding

equipment and the molding technique of a molded laminate of the epidermis material and thermoplastics which covered only especially the predetermined fraction with epidermis material with respect to the molding equipment and the molding technique of mold goods which the resin core material has expressed as it is

[0002]

[Description of the Prior Art] The two-color molded laminate of the epidermis material and thermoplastics which covered only the above predetermined fractions with epidermis material is used for interior parts, such as a door trim of an automobile, and a rear side trim.

[0003] Such a manufacture of a two-color molded laminate fabricates thermoplastics with injection molding etc. to the resin core material beforehand. Although the parts which adhesives etc. were used [parts] for this resin core material, and the epidermis material of a predetermined configuration was stuck [parts], or made epidermis material stick on hardboard etc. beforehand are manufactured and there is a method of attaching this part in a resin core material using a screw etc. By such technique, while the back process was required and time was taken, it had become the factor of a cost rise.

[0004] Then, in the manufacture of such a two-color molded laminate, what was indicated by JP,64-26414,A is proposed that it should improve.

[0005] According to this, as shown in drawing 5 , the epidermis material 62 and the melting resin 63 are supplied between Shimokane type 60 and 61 the top for non-closed down mould molding. Close the Shimokane types 60 and 61 a top and it faces manufacturing the two-color molded laminate which consists of epidermis material 62 and thermoplastics (melting resin 63). The two-color molded laminate which set to the predetermined position on metal mold 60 the epidermis material 62 judged in the predetermined configuration the top, and covered only the predetermined fraction with the epidermis material 62 by [by the side of the rear face of the epidermis material 62] supplying the melting resin 63 to a center section mostly and which consists of epidermis material 62 and thermoplastics is obtained.

[0006] That is, a front-face side is turned up and the epidermis material 62 judged in the predetermined dimension is set to the predetermined fraction of the molding side of metal mold 60 a top. Subsequently, you operate the hoist style (not shown) of mold-clamp equipment, and the path clearance of the mold cavity side which metal mold 60 is dropped a top and metal mold 60 and Shimokane type 61 forms a top makes it stop in product thickness in a larger position (illustration status). The melting resin 63 is supplied to the background side and mold cavity of the epidermis material 62 by melting resin feeders (not shown), such as an injection molding machine, in this halt position through the resin path (not shown) in which it was prepared in Shimokane type 61.

[0007] subsequently, a hoist style is operated again -- making -- the upper -- if the epidermis material 62 is made to press by dropping metal mold 60 -- the melting resin 63 -- metal mold -- a flow expansion is carried out between mold cavities, the epidermis material 62 and thermoplastics are united, and a size enlargement is completed. Consequently, the part has completed the two-color molded laminate which was covered with the epidermis material 62 and which consists of epidermis material 62 and thermoplastics.

[0008] Moreover, what was indicated by JP,6-246783,A is proposed by molding of multi-quality-of-the-material mold goods. The 2nd Shimo, shift a phase 180 degrees and metal

mold 73 and 74 is attached. the metal mold which it is prepared in a stationary platen 70 possible [rotation], and is reversed by the rotary motor 71 as this is shown in drawing 6 - the rotation board 72 -- the 1st -- To the movable head 75 which has been arranged in the position which counters with a stationary platen 70, and was supported by two or more diver 75A possible [vertical movement] The 1st Shimo, metal mold 74 is made to counter the 2nd Shimo, metal mold 77 is formed on the metal mold 76 and secondary on a primary side, and it has the metal mold 73 and the structure which connected the primary side injection cylinder 78 to metal mold 76, and connected the secondary injection cylinder 79 to metal mold 77 on secondary on the primary side, respectively. [0009] and the status that metal mold 73 meets metal mold 76 on a primary side the 1st Shimo, and metal mold 74 meets metal mold 77 on secondary the 2nd Shimo, and it was carried out **** and the mold clamp -- the zinc of the primary side injection cylinder 78 to the melting status -- a primary side top -- metal mold 76 -- and it is injected in the mold cavity of metal mold 73 the 1st Shimo, and the metal section is fabricated among mold goods At this time, a melting resin is not injected from the secondary injection cylinder 79.

[0010] next, while a die opening is carried out, a rotary motor 71 drives -- having -- metal mold -- when the rotation board 72 rotates 180 degrees, metal mold 73 meets metal mold 77 on secondary the 1st Shimo, and the 2nd Shimo, metal mold 74 meets metal mold 76 on a primary side, and is carried out **** and a mold clamp again And the metal mold 76 and the multi-quality-of-the-material mold goods which are injected in the mold cavity of metal mold 74 the 2nd Shimo, and carried out the laminating of the resin section to the metal section are fabricated for a melting resin on a primary side from the secondary injection cylinder 79.

[0011]

[Problem(s) to be Solved by the Invention] However, if it is in the manufacture technique of the above-mentioned conventional two-color molded laminate Turn a front-face side up and the epidermis material 62 judged in the predetermined dimension is set to the predetermined fraction of the molding side of metal mold 60 the top at each time of molding of a two-color molded laminate. In order to position so that the sacrifice line section of the epidermis material 62 may be located on the center line of moire lump Mizobe of Shimokane type 61, there was a trouble where it did not suit it being delayed and mass-producing a two-color molded laminate.

[0012] Moreover, if it was in molding of the above-mentioned multi-quality-of-the-material mold goods, there was the 1st Shimo of troubles, like the metal mold 73 and metal mold is [two or more] necessary so that metal mold 74 may be made to counter the 2nd Shimo and metal mold 77 may be arranged on the metal mold 76 and secondary on a primary side, and an installation cost increases.

[0013] It is in accomplishing this invention paying attention to the above-mentioned trouble, enabling an installation cost, as for the place made into the 1st purpose, to fabricate about [becoming cheap] and a molded laminate easily, and offering the molding equipment of the molded laminate which can raise mass-production nature.

[0014] moreover, the place made into the 2nd purpose of this invention -- one object for molding -- the object for molding of metal mold and another side -- the metal mold of the couple with metal mold -- it is in enabling it to fabricate a molded laminate with a

configuration easily, and offering the molding technique of the molded laminate which can raise mass-production nature

[0015]

[Means for Solving the Problem] In order to attain the 1st above-mentioned purpose, the molding equipment of the molded laminate concerning invention of a claim 1 At the time of **** of metal mold, mutual **** is put together and while is formed. on the other hand -- reaching -- the object for molding of another side -- with the mold cavity for Plastic-solid molding It is the closed space where ***** which has any of metal mold or one minimum angle with which it extracts and an angle fills a seal performance slides on the perpendicular wall surface of the vertical section of one Plastic solid, and is formed in it. on the other hand -- reaching -- the object for molding of another side -- The mold cavity for Plastic-solid molding of another side which used one Plastic solid for a part of the configuration site, It is characterized by for while having supplied one molding material to the mold cavity for one Plastic-solid molding, and having a supply means and the supply means of another side which supplies the molding material of another side to the mold cavity for Plastic-solid molding of another side.

[0016] Metal mold is *****ed. such a configuration -- one object for molding -- the object for molding of metal mold and another side -- the object for both molding, after forming the mold cavity for one Plastic-solid molding by **** of metal mold Supply one molding material to the mold cavity for one's of these Plastic-solid molding by one molding-material supply means, and one Plastic solid is fabricated. after that -- the object for molding -- any of metal mold, or one side by [which carries out an abbreviation equivalent to the thickness of the Plastic solid of another side] carrying out a distance move Slide ***** which has any of metal mold, or the minimum angle with which one side extracts and an angle fills a seal performance on the perpendicular wall surface of the vertical section of one Plastic solid, and the mold cavity for Plastic-solid molding of another side as a closed space is formed. on the other hand -- reaching -- the object for molding of another side -- The molding material of another side is supplied to the mold cavity for Plastic-solid molding of this another side by the molding-material supply means of another side, and laminate molding of the Plastic solid of another side is carried out to one Plastic solid.

[0017] thus, carrying out laminate molding of the Plastic solid of another side to one Plastic solid -- one object for molding -- the object for molding of metal mold and another side -- the metal mold of the couple with metal mold -- since a configuration may be used, it can be enabled to fabricate easily about [that an installation cost becomes cheap] and a molded laminate, and mass-production nature can be raised

[0018] In order to attain the 2nd above-mentioned purpose, moreover, the molding technique of the molded laminate concerning invention of a claim 2 one object for molding -- the object for molding of metal mold and another side -- metal mold -- ****ing -- the object for both molding, after forming the mold cavity for one Plastic-solid molding by **** of metal mold The specified quantity move of any of metal mold or one side is carried out in the orientation of an open type. the mold cavity for one's of these Plastic-solid molding -- one molding-material supply means -- one molding material -- supplying -- one Plastic solid -- fabricating -- after that -- on the other hand -- reaching -- the object for molding of another side -- It is the closed space where ***** which has any of metal mold or the minimum angle with which one side extracts and an angle fills a

seal performance slides on the perpendicular wall surface of the vertical section of one Plastic solid, and is formed in it. on the other hand -- reaching -- the object for molding of another side -- It is characterized by forming the mold cavity for Plastic-solid molding of another side which used one Plastic solid for a part of the configuration site, supplying the molding material of another side to the mold cavity for Plastic-solid molding of this another side by the molding-material supply means of another side, and carrying out laminate molding of the Plastic solid of another side to one Plastic solid.

[0019] therefore, one object for molding -- the object for molding of metal mold and another side -- the metal mold of the couple with metal mold -- it can be enabled to fabricate a molded laminate with a configuration easily, and mass-production nature can be raised

[0020]

[Embodiments of the Invention] Hereafter, the gestalt of operation of this invention is explained based on a drawing, the object for molding of the molding equipment of the molded laminate concerning this invention in the perspective diagram of the door trim which is an interior member for automobiles as a two-color molded laminate with which drawing 1 was fabricated by the molding equipment and the molding technique of a molded laminate concerning this invention, and drawing 2 -- metal mold -- the cross section and drawing 3 which structure omitted a part -- the molding equipment of this molded laminate -- setting -- the object for molding of the mold cavity formation status for epidermis material molding -- metal mold -- the cross section and drawing 4

[0021] The two-color molded laminate manufactured by the molding equipment and the molding technique of a molded laminate concerning this invention is [the following and] a door trim as an interior member for automobiles which is shown in the drawing 1 and the drawing 2 . The profile configuration of this door trim 1 has been carried out from the resin core material 2 which is thermoplastics formed in the desired curved-surface configuration, and the epidermis material 3 by which attachment unification was carried out in part on the front face of this resin core material 2.

[0022] This resin core material 2 is fabricated considering the polypropylene resin or the polypropylene resin simple substance which mixed fillers, such as talc, as a material, and the epidermis material 3 is formed in the foaming layer which consists of a polypropylene elastomer etc., and will really be fabricated by the part by the side of the front face of the resin core material 2 at the time of the molding.

[0023] the molding equipment of the molded laminate concerning this invention is shown in drawing 2 -- as -- on the other hand, the object for molding -- the punch for molding 4 which is metal mold, and the object for molding of another side -- it has the female mold for molding 5 which is metal mold, and this punch for molding 4 moves vertically to the female mold for molding 5 And **** 6 counters the punch for molding 4, **** 7 makes the female mold for molding 5 counter, respectively, it has formed, and mold cavity K for resin core material molding which is a mold cavity for one Plastic-solid molding in both ****s 6 and 7 is formed.

[0024] **** 6 of the punch for molding 4 is formed in mating face 4A with the female mold for molding 5 of this punch for molding 4. Carry out the profile of the configuration of **** [on the other hand / (side front)] of the resin core material 2 of the door trim 1 etc., it is, and the configuration is accomplished. It has 1st concavity 12A, 2nd concavity 12B, and 3rd concavity 12C on the right from the left, and 1st concavity 12A and 2nd

concavity 12B stand in a row by 1st punch side heights 12D, and 2nd concavity 12B and 3rd concavity 12C stand in a row by 2nd punch side heights 12E.

[0025] the [and] -- one wall surface section of 1 concavity 12A extracts, the angle has accomplished it to perpendicular section a of zero (0), the wall surface section of another side of 1st concavity 12A forms one wall surface section of 1st punch side heights 12D, and this wall surface section is accomplished at the minimum angle with which it extracts and angle fills seal performance, i.e., ***** b whose angle it extracts and is zero (0) -5 degree

[0026] the [moreover,] -- one wall surface section of 3 concavity 12C extracts, the angle has accomplished it to perpendicular section c of zero (0), the wall surface section of another side of 3rd concavity 12C forms one wall surface section of 2nd punch side heights 12E, and this wall surface section is accomplished at the minimum angle with which it extracts and angle fills seal performance, i.e., ***** d whose angle it extracts and is zero (0) -5 degree

[0027] the [moreover,] -- 2 concavity 12B has flat part e, the end section of this flat part e stands in a row in inclined-plane section f of 1st punch side heights 12D, and the other end of flat part e stands in a row in inclined-plane section g of 2nd punch side heights 12E

[0028] **** 7 of the female mold for molding 5 is formed in mating face 5A with the punch for molding 4 of this female mold for molding 5. Carry out the profile of the configuration of **** of another side (background) of the resin core material 2 of the door trim 1 etc., it is, and the configuration is accomplished. 1st heights 13A corresponding to the aforementioned 1st concavity 12A to the right from the left, 2nd heights 13B corresponding to the aforementioned 2nd concavity 12B, It has 3rd heights 13C corresponding to 3rd concavity 2C. 1st heights 13A and 2nd heights 13B It stands in a row from 1st female mold side concavity 13D corresponding to the aforementioned 1st punch side heights 12D, and 2nd heights 13B and 3rd heights 13C stand in a row by 2nd female mold side concavity 13E corresponding to the aforementioned 2nd punch side heights 12E.

[0029] the [and] -- one wall surface section of 1 heights 13A extracts, the angle has accomplished it to perpendicular section a' of zero (0), the wall surface section of another side of 1st heights 13A forms one wall surface section of 1st female mold side concavity 13D, this wall surface section extracts and the angle has accomplished it to ***** b' of zero (0)

[0030] the [moreover,] -- one wall surface section of 3 heights 13C extracts, the angle has accomplished it to perpendicular section c' of zero (0), the wall surface section of another side of 3rd heights 13C forms one wall surface section of 2nd female mold side concavity 13E, this wall surface section extracts and the angle has accomplished it to ***** d' of zero (0)

[0031] the [moreover,] -- 2 heights 13B has flat part e', the end section of this flat part e' stands in a row in inclined-plane section f' of 1st female mold side concavity 13D, and the other end of flat part e' stands in a row in inclined-plane section g' of 2nd female mold side concavity 13E

[0032] And the gate for resin material supply 14 connected to the discharge side of the injection cylinder 16 which is one molding-material supply means through path 14A is established in the aforementioned punch for molding 4, and opening of this gate for resin

material supply 14 is carried out in the center of flat part e of 2nd concavity 12B of the aforementioned type section 6. Moreover, the gate for resin material supply 15 connected to the discharge side of the injection cylinder 17 which is the molding-material supply means of another side through path 15A is established in the female mold for molding 5, respectively, and opening of the gate for resin material supply 15 is carried out in the center of flat part e' of 2nd heights 13B of **** 7. Moreover, the support molding section 18 which is a key-like concavity is formed in this flat part e'.

[0033] Next, a manufacture of the door trim 1 as an interior member for automobiles which is a two-color molded laminate is explained using the molding equipment of the molded laminate constituted as mentioned above.

[0034] If it is in molding equipment, the aforementioned punch for molding 4 downs and it laps with the female mold for molding 5, and by the mold closed state which the mating faces 4A and 5A of both molds contacted mutually, as shown in drawing 2, **** 6 and 7 is put together and mold cavity K of the shape of the configuration of the resin core material 2 of the door trim 1 and isomorphism is formed. 1st heights 13A to the aforementioned 2nd concavity 12B at the aforementioned 1st concavity 12A namely, 2nd heights 13B 3rd heights 13C to 1st punch side heights 12D at 3rd concavity 2C 1st female mold side concavity 13D respectively, 2nd female mold side concavity 13E carries out abbreviation etc., it is in 2nd punch side heights 12E at the thickness of the resin core material 2, the clearance of a dimension is consisted and countered, and perpendicular section a and a' contacts mutually, and ***** b, b', d, and d' has countered mutually.

[0035] The aforementioned injection cylinder 17 operates, and from the discharge side of this, melting resin (polypropylene resin or polypropylene resin simple substance which mixed fillers, such as talc) S which is one molding material is breathed out, and it fills up with this status in the aforementioned mold cavity K for resin core material molding through the gate for resin material supply 15. In this case, it is prepared in the aforementioned punch for molding 4, and the female mold for molding 5, and the gas (air) in mold cavity K for resin core material molding is discharged by the suction means (not shown). Therefore, melting resin S spreads in mold cavity K for resin core material molding, and the support molding section 18 is also filled up with it.

[0036] And the resin core material 2 which is one Plastic solid is fabricated by cooling and solidification of melting resin S. In this case, the aforementioned punch for molding 4 extracts, ***** b whose angle is zero (0) -5 degree, and the female mold for molding 5 extract, ***** d whose angle it extracts and is the zero (0) -5 degree and the female mold for molding 5 of between ***** b' of zero (0) and the aforementioned punch for molding 4 extract [an angle], and vertical sections 2X and 2Y are formed for an angle between ***** d' of zero (0), respectively.

[0037] Next, 2nd concavity 12B which height h (inside of height dimension H of the vertical sections 2X and 2Y of the resin core material 2) which carries out the abbreviation equivalent of the aforementioned punch for molding 4 to thickness t of epidermis material is raised, and was sandwiched by 1st punch side heights 12D and 2nd punch side heights 12E, The epidermis material molding mold cavity K-1 which is a mold cavity for Plastic-solid molding of another side sealed between the resin core materials 2 which counter this 2nd concavity 12B is formed.

[0038] That is, the support molding section 18 is filled up with melting resin S at the time of molding of the resin core material 2, and since support 2-1 is formed when this melting resin S cools and solidifies, the resin core material 2 is fixed to the female mold for molding 5 with this support 2-1. Therefore, when raising the aforementioned punch for molding 4, the resin core material 2 does not follow the punch for molding 4, but for molding, is accepted punch 4 and goes up.

[0039] And when raising the aforementioned punch for molding 4 to height h which carries out an abbreviation equivalent to thickness t of the epidermis material 3, ***** b of the punch for molding 4 and ***** d of the female mold for molding 5 slide on the perpendicular wall surfaces 2x and 2y of the vertical sections 2X and 2Y of the resin core material 2. However, since the amount (height h which carries out an abbreviation equivalent to thickness t of epidermis material) of elevation of the aforementioned punch for molding 4 was in height dimension H of the vertical sections 2X and 2Y of the resin core material 2, as shown in drawing 3, aforementioned ***** b and d is in the contact status, and, as for the epidermis material molding mold cavity K-1, was sealed by the perpendicular wall surfaces 2x and 2y of the aforementioned vertical sections 2X and 2Y in the upper limit

[0040] The aforementioned injection cylinder 16 operates, and from the discharge side of this, the melting resin for epidermis material S-1 (polypropylene elastomer) which is the molding material of another side is breathed out, and it fills up with this status in the aforementioned epidermis material molding mold cavity K-1 through the gate for resin material supply 14. In this case, it is prepared in the aforementioned punch for molding 4, and the gas (air) in the epidermis material molding mold cavity K-1 is discharged by the suction means (not shown). Therefore, the melting resin for epidermis material S-1 spreads in the epidermis material molding mold cavity K-1, the epidermis material S-1, fabricated by cooling and solidification of the melting resin for epidermis material S-1, and the epidermis material 3 here is united with the resin core material 2.

[0041] Next, it moves to a mold elevation start process, the aforementioned punch for molding 4 is raised, an open type is carried out at a mold elevation end process, and the door trim 10 which is a two-color molded laminate is taken out.

[0042] According to the above-mentioned gestalt of operation, the punch for molding 4 and female mold for molding 5 are *****ed. After forming mold cavity K for resin core material molding by ***** 6 and 7 of the punch for molding 4, and the female mold for molding 5 Supply melting resin S to this mold cavity K for resin core material molding in the injection cylinder 16, fabricate the resin core material 2, and the specified quantity move of the punch for molding 4 is carried out in the orientation of an open type after that. the minimum angle of the punch for molding 4 with which it extracts and an angle fills a seal performance -- that is Extract and ***** whose angle is zero (0) -5 degree Perpendicular wall surface 2x of the vertical sections 2X and 2Y of the resin core material 2, It is the closed space which slides on 2y and is formed in it, and the epidermis material molding mold cavity K-1 which used the resin core material 2 for a part of the configuration site is formed, the melting resin for epidermis material S-1 is supplied to this epidermis material molding mold cavity K-1 in the injection cylinder 17, and laminate molding of the epidermis material 3 is carried out to the resin core material 2.

[0043] thus, carrying out laminate molding of the epidermis material 3 to the resin core material 2 -- the metal mold of the couple of the punch for molding 4, and the female

mold for molding 5 -- since a configuration may be used, it can be enabled to fabricate easily about [that an installation cost becomes cheap] and a molded laminate, and mass-production nature can be raised

[0044]

[Effect of the Invention] As explained above, according to the molding equipment of the molded laminate concerning invention of a claim 1 At the time of **** of metal mold, mutual **** is put together and while is formed. on the other hand -- reaching -- the object for molding of another side -- with the mold cavity for Plastic-solid molding It is the closed space where ***** which has any of metal mold or one minimum angle with which it extracts and an angle fills a seal performance slides on the perpendicular wall surface of the vertical section of one Plastic solid, and is formed in it. on the other hand -- reaching -- the object for molding of another side -- The mold cavity for Plastic-solid molding of another side which used one Plastic solid for a part of the configuration site, By while having supplied one molding material to the mold cavity for one Plastic-solid molding, and having had the supply means and the supply means of another side which supplies the molding material of another side to the mold cavity for Plastic-solid molding of another side one object for molding -- the object for molding of metal mold and another side -- metal mold -- *****ing -- the object for both molding, after forming the mold cavity for one Plastic-solid molding by **** of metal mold Supply one molding material to the mold cavity for one's of these Plastic-solid molding by one molding-material supply means, and one Plastic solid is fabricated. after that -- the object for molding -- any of metal mold, or one side by [which carries out an abbreviation equivalent to the thickness of the Plastic solid of another side] carrying out a distance move Slide ***** which has any of metal mold, or the minimum angle with which one side extracts and an angle fills a seal performance on the perpendicular wall surface of the vertical section of one Plastic solid, and the mold cavity for Plastic-solid molding of another side as a closed space is formed. on the other hand -- reaching -- the object for molding of another side -- The molding material of another side is supplied to the mold cavity for Plastic-solid molding of this another side by the molding-material supply means of another side, and laminate molding of the Plastic solid of another side is carried out to one Plastic solid.

[0045] thus, carrying out laminate molding of the Plastic solid of another side to one Plastic solid -- one object for molding -- the object for molding of metal mold and another side -- the metal mold of the couple with metal mold -- since a configuration may be used, it can be enabled to fabricate easily about [that an installation cost becomes cheap] and a molded laminate, and mass-production nature can be raised

[0046] Metal mold is *****ed. moreover -- according to the molding technique of the molded laminate concerning invention of a claim 2 -- one object for molding -- the object for molding of metal mold and another side -- the object for both molding, after forming the mold cavity for one Plastic-solid molding by **** of metal mold The specified quantity move of any of metal mold or one side is carried out in the orientation of an open type. the mold cavity for one's of these Plastic-solid molding -- one molding-material supply means -- one molding material -- supplying -- one Plastic solid -- fabricating -- after that -- on the other hand -- reaching -- the object for molding of another side -- It is the closed space where ***** which has any of metal mold or the minimum angle with which one side extracts and an angle fills a seal performance slides

on the perpendicular wall surface of the vertical section of one Plastic solid, and is formed in it. on the other hand -- reaching -- the object for molding of another side -- The mold cavity for Plastic-solid molding of another side which used one Plastic solid for a part of the configuration site is formed. By supplying the molding material of another side to the mold cavity for Plastic-solid molding of this another side by the molding-material supply means of another side, and having been made to carry out laminate molding of the Plastic solid of another side to one Plastic solid one object for molding -- the object for molding of metal mold and another side -- the metal mold of the couple with metal mold -- it can be enabled to fabricate a molded laminate with a configuration easily, and mass-production nature can be raised.

[Brief Description of the Drawings]

[Drawing 1] It is the perspective diagram of the door trim which is an interior member for automobiles as a two-color molded laminate fabricated by the molding equipment and the molding technique of a molded laminate concerning this invention.

[Drawing 2] the object for molding of the molding equipment of the molded laminate concerning this invention -- metal mold -- it is the cross section which structure omitted the part

[Drawing 3] the molding equipment of this molded laminate -- setting -- the object for molding of the mold cavity formation status for epidermis material molding -- metal mold -- it is the cross section which structure omitted the part

[Drawing 4] It is the enlarged view of A section of drawing 3 .

[Drawing 5] the object for molding of the molding equipment of the conventional molded laminate -- metal mold -- it is the cross section of structure

[Drawing 6] the object for molding of the molding equipment of other conventional molded laminates -- metal mold -- it is the cross section of structure

[Description of Notations]

2 Resin Core Material (One Plastic Solid)

3 Epidermis Material (Plastic Solid of Another Side)

4 Punch for Molding (for [One] Molding Metal Mold)

5 Female Mold for Molding (for Molding of Another Side Metal Mold)

6, 7 Type section

16 Injection Cylinder (One Supply Means)

17 Injection Cylinder (Supply Means of Another Side)

K The mold cavity for resin core material molding (mold cavity for one Plastic-solid molding)

K-1 Epidermis material molding mold cavity (mold cavity for Plastic-solid molding of another side)